

# Horticulture

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## Edamame in the Garden

*Dennis Worwood*

USU Extension Educator

Edamame (eh-dah-MAH-may), or vegetable soybeans, have long been a staple food in Asia and are gaining popularity in America. Edamame beans (seeds) are eaten green, rather than dry, and have a sweet, nutty flavor. Usually consumed as a snack, Edamame can also be used in recipes where immature lima, garbanzo or fava beans are called for, as in making hummus.

### Planting

Edamame need full sun, warm temperatures, and rich, moist soil for proper growth. Prepare the seedbed by tilling 2 inches of compost or organic matter into the soil. If desired, 1 pound of 16-16-8 or equivalent fertilizer can be applied per 100 square feet. The goal is to have a smooth, fine, weed-free seedbed.

Like all legumes, Edamame team with a specific species of rhizobium bacteria to “fix” nitrogen from the air into a form that plants can use. If soybeans have not been grown in the garden before, seeds can be dusted with inoculant to insure that the proper rhizobium is present. Many seed suppliers sell soybean inoculant (*Rhizobium japonicum*). If seeds are not inoculated, fertilizer can supply needed nitrogen.

After all danger of frost is past, and when soil temperature is at least 60°F, sow seeds 2 to 4 inches apart in furrows that are 1 to 1 ½ inches deep. Rows can be spaced 8 to 24 inches apart. Closer row spacing produces

higher yields and greater competition against weeds; wider spacing results in bigger plants with larger pods. Once seedlings have emerged, thin plants to stand 4 inches apart in the row.

Edamame seedlings can be killed or damaged by seed-eating insects or damping-off diseases. The best defense against these pests is to plant into warm, moist soil that favors rapid seedling growth.

Trellises are not needed. Edamame plants are self-supporting 14 to 24-inch tall bushes.



*Edamame plants growing in a wide row.*

### Varieties

Choose varieties that will mature in your growing season. Table 1 lists some commonly-available varieties that the author has grown. Edamame varieties not named may be equally suitable.

**Table 1. Commonly available varieties of Edamame.**

Variety	Days to Harvest	Comments
Midori Giant	70	Largest pods and beans of early varieties
Envy	70	Widely available; early maturing
Early Hakucho	75	Compact plant, early maturing
Kouri	80	Vigorous, high yielding
Tohya	80	Productive main season variety
Shirofumi	90	High yield, over 100 pods per plant
Sayamusume	90	Large pods and beans
Be Sweet	92	Large plant, late maturing, high yield

Like all soybeans, Edamame plants flower after midsummer when days are getting shorter (and nights are getting longer). Each variety is prompted to flower when a certain day length is reached. Latitude affects day length, with longer summer days in the north and shorter days closer to the equator.

Edamame varieties are classified in “maturity groups” 0 through 8 according to their day length requirement. Varieties in maturity group 2 are adapted to northern Utah, group 3 to central Utah, and group 4 to far southern Utah. Unfortunately, maturity group rating is seldom provided in descriptions of Edamame varieties, so gardeners must rely on estimates of days from planting to maturity.

If Edamame flowers when the plants are very small, doesn’t begin flowering until very late in the growing season, or doesn’t flower at all, the variety was in the wrong maturity group for the area’s latitude.

Edamame harvest cannot be extended by repeatedly planting the same variety over a period of weeks. Since flowering is triggered by day length, all plants will recognize the signal and begin flowering at about the same time, regardless of plant size. To extend the harvest season, plant two or more varieties with different days to maturity.

## **Fertilization**

Edamame plants begin “fixing” nitrogen by the time seedlings are 6 to 8 inches tall if the seed was inoculated with the correct rhizobium. No fertilizer is required beyond the initial seedbed preparation. If seeds were not inoculated, plants can be side-dressed once with a light application of nitrogen fertilizer when seedlings are 8 to 10 inches tall.

## **Irrigation**

Water requirements for Edamame are similar to those of green or wax beans. Water stress at any point in the life cycle will limit plant growth and yield. The most critical period is from bloom through pod fill, when drought stress can cause aborted blossoms, small pods and shriveled beans.

Weekly irrigation is usually sufficient, but irrigation timing and amount vary depending upon climate, soil type, and the stage of plant growth. From bloom through pod fill, plants typically use from 1 to 1 ½ half inches of water per week. Edamame may need to be irrigated twice a week during this critical period. The goal is to keep the root zone moist, but not soggy. Overwatering favors root rot and increases the risk of iron chlorosis.

## **Iron Chlorosis**

Chlorosis (yellow leaves with green veins) is a symptom of iron deficiency. Iron chlorosis is a common problem in Edamame grown in Utah. Affected leaves get progressively lighter and may turn nearly white before dying. Chlorotic plants are less vigorous and yield less than healthy plants.

Most Utah soils are alkaline (have a pH above 7). In alkaline soils iron may be present in a form that plants cannot readily use. Excessive irrigation increases the risk of iron chlorosis.

To minimize iron chlorosis, practice good irrigation management. It is usually impractical to attempt to lower the pH of alkaline soils to make iron more available.

The most effective treatment for iron chlorosis is a chelated (KEY-lated) fertilizer containing ferric ethylenediamine di-o-hydroxyphenylacetic acid (FeEDDHA). A variety of products containing FeEDDHA are available, including Sprint Fe138, Miller’s Ferriplus, Grow



More EDDHA and many others. They quickly correct iron chlorosis if applied according to label directions.

FeEDDHA is a fine brownish-red powder that is difficult to spread evenly. Dissolve a tablespoon of powder in a gallon of water and use a watering can to apply the solution around plants.



*Iron chlorosis on Edamame.*

### Weed Control

Regular weeding is important, especially when plants are small. Mulch applied between rows after Edamame plants have emerged will smother weed seedlings and conserve soil moisture. In multiple-row plantings, Edamame plants eventually cover the area, suppressing weed growth.

### Pests and Diseases

A variety of insects, mites and diseases can affect Edamame. Since soybeans are not a common crop in Utah, soybean pests and diseases are not abundant, and control is usually not needed. This is fortunate, since few home garden pesticides are labeled for use on Edamame. Before applying any pesticide to Edamame, check the label to make sure it can be used on green or vegetable soybeans.

Spider mites are perhaps the most common Edamame pest in Utah. Infested plants show characteristic “bronzing” of leaves caused by mite feeding. To check for mites, shake affected leaves above a sheet of paper and look for small specks crawling on the paper. Mites can be controlled by applying insecticidal soap to the underside of leaves. Thorough coverage is important since the soap solution must contact the mites directly to kill them.

Beetles, grasshoppers and other chewing insect pests can usually be controlled by hand picking.

Foliar diseases are not common on Edamame in Utah’s dry climate. Root and stem rots can be minimized by planting in warm soil and by avoiding over-irrigation.

Rabbits and deer love soybeans and can quickly defoliate plants. Repellants and scare devices provide temporary protection. The most effective scare device is an active guard dog. Rabbits may be caught in live traps, but it is difficult to coax them into traps when food is readily available outside. Fencing (including portable electric fencing) that excludes four-legged pests is a good control option.

### Harvest

Edamame is ready to harvest when the pods are well-filled, but still bright green. The seeds should be nearly touching in pods that have two or more seeds. Harvest pods before they begin to turn yellow. Pods that are yellow or brown are over-mature and yield beans that are edible, but taste starchy rather than sweet. All pods on a given plant mature over a period of a few days and can be harvested in two or three pickings.



*Edamame pods.*

Edamame can also be harvested “on the branch,” meaning that the entire plant is pulled up when most of the pods reach maturity. Roots and leaves are removed. This harvest method is

sometimes used when the Edamame will be sold locally.

### **Cooking and Storage**

Edamame is usually consumed as a snack, similar to peanuts. Persons unfamiliar with Edamame may be put off by the appearance of the fuzzy, lumpy pods. These reservations disappear when people taste the beans.

To prepare Edamame as a snack, wash pods and boil them for 5 to 8 minutes in salted water. Squeeze the cooked pod between thumb and forefinger to “shoot” the beans into the mouth. If the beans will be used in a recipe, boil the pods for 5 to 8 minutes in unsalted water and squeeze the beans into bowl.

Uncooked pods keep for about 1 week under refrigeration. For longer storage, wash pods and blanch them for 3 minutes in boiling water. Drain and dry the pods, seal them in a bag, and freeze. Frozen pods are prepared the same as fresh pods.



*Cooked Edamame beans and pods.*

### **Nutrition**

Edamame beans are about 40% protein and provide several essential amino acids. They are a good source of Vitamin C, Vitamin K, iron, and fiber.

### **For Further Reading:**

Edamame. University of Kentucky Cooperative Extension Service.

<http://www.uky.edu/Ag/CCD/introsheets/edamame.pdf>

Edamame and “Gardensoy.” National Soybean Research Laboratory.

<http://www.nsrll.illinois.edu/general/edamame.html>

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